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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/572,518

03/15/2007

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4015-5818

4849

24112 7590 11/16/2010  
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EXAMINER

CURS, NATHAN M

ART UNIT

PAPER NUMBER

2613

MAIL DATE

DELIVERY MODE

11/16/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/572,518	<b>Applicant(s)</b> PICHLER ET AL.	
	<b>Examiner</b> NATHAN M. CURS	<b>Art Unit</b> 2613	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 September 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/30/10</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 16 is objected to because of the following informalities:

Claim 16 in line 14 should be changed as follows for grammatical clarity:

...~~alternatively~~ to the interface alternatively from the switching unit or from...

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 12-14, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves et al. ("Graves") (US Patent Application Publication No. 2002/0064336).

Regarding claim 12, Graves discloses a node for an optical communication network (fig. 3 and paragraphs 0035-0036) comprising: at least one switching unit (fig. 3 where elements 12a-12m together read on a switching unit); a plurality of optical interfaces to connect to a Wavelength Division Multiplex (WDM) transmission line (fig. 3 elements 16 and 18), comprising: a demultiplexer to disassemble an incoming multiplex signal arriving from the WDM transmission line into a plurality of input channels, each input channel being supplied to an input port of the switching unit (fig. 3 element 16);

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and a multiplexer to assemble a plurality of output channels from a corresponding plurality of output ports of the switching unit into an outgoing multiplex signal (fig. 3 element 18); and at least one receiver to extract an information signal received from the optical communication network (fig. 3 element 36 and paragraph 0034, where there are inherent receivers for each drop signal); and an input branching mechanism disposed on the path of the input channels between each optical interface and the switching unit to selectively supply an input channel alternatively to the switching unit or to the receiver (fig. 3 element 56 and paragraphs 0035-0036, where element 56 selectively supplies each input channels to either the switching unit 12a-12m when it's working, or to the drop channels by way of the additional spare switching unit 12m+1 when switching unit 12a-12m has a failure). Graves does not specifically disclose that *each* optical interface unit of the fig. 3 embodiment comprises a demultiplexer and a multiplexer. However, Graves discloses that the unidirectional nature of the disclosure is only to simplify the drawings and that bidirectional traffic is supported by the switching planes with suitable input and output components (paragraph 0066). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify elements 16 and 18 of Graves fig. 3 to include both multiplexers and demultiplexers, and to modify elements 56 and 58 to support bidirectional traffic to and from the switching units and the add and drop channels, to support the bidirectional traffic suggested by Graves.

Regarding claim 13, Graves discloses the node of claim 12 wherein the demultiplexer includes a plurality of output ports (fig. 3 element 16), and wherein the input branching mechanism comprises a switch associated with each demultiplexer

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output port to selectively connect the demultiplexer output port to one of the input ports of the switching unit or to the receiver (fig. 4 and paragraphs 0037-0039, applicable for element 56).

Regarding claim 14, Graves discloses the node of claim 13 but does not specifically disclose that the number of receivers corresponds to the number of input channels, and wherein the input branching mechanism connects each receiver to an associated demultiplexer output port. However, Graves discloses plural receivers (fig. 3 element 36, where R represents plural drop channels, each having an inherent receiver). It would have been obvious to one of ordinary skill in the art at the time of the invention to set R to a value at least the same as the number of demultiplexed channels, so that each demultiplexed channel has the option of being switched through or dropped, including protection switched through additional switching unit  $12m+1$ , for maximizing traffic routing flexibility.

Regarding claim 16, Graves discloses a node for an optical communication network (fig. 3 and paragraphs 0035-0036) comprising: at least one switching unit (fig. 3 where elements 12a-12m together read on a switching unit); a plurality of optical interfaces to connect to a Wavelength Division Multiplex (WDM) transmission line (fig. 3 elements 16 and 18), comprising: a demultiplexer to disassemble a multiplex signal arriving from the WDM transmission line into a plurality of input channels, each input channel being supplied to an input port of the switching unit (fig. 3 element 16); and a multiplexer to assemble a plurality of output channels from a corresponding plurality of output ports of the switching unit into an outgoing multiplex signal (fig. 3 element 18);

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and at least one transmitter to supply an information signal to the optical communication network (fig. 3 element 34 and paragraph 0034, where there are inherent transmitter for each add signal); and an output branching mechanism disposed on the path of the output channels between each optical interface and the switching unit to selectively supply an output channel to the interface alternatively from the switching unit and from the transmitter (fig. 3 element 58 and paragraphs 0035-0036, where element 58 selectively outputs each channels from either the switching unit 12a-12m when it's working, or from the add channels by way of additional switching unit 12m+1 when switching unit 12a-12m has a failure). Graves does not specifically disclose that *each* optical interface unit of the fig. 3 embodiment comprises a demultiplexer and a multiplexer. However, Graves discloses that the unidirectional nature of the disclosure is only to simplify the drawings and that bidirectional traffic is supported by the switching planes with suitable input and output components (paragraph 0066). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify elements 16 and 18 of Graves fig. 3 to include both multiplexers and demultiplexers, and to modify elements 56 and 58 to support bidirectional traffic to and from the switching units and the add and drop channels, to support the bidirectional traffic suggested by Graves.

Regarding claim 17, Graves discloses the node of claim 16 wherein the multiplexer includes a plurality of input ports (fig. 3 element 18), and wherein the output branching mechanism comprises a switch associated with each multiplexer input port to

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selectively connect the multiplexer input port to one of the output ports of the switching unit or to the transmitter (fig. 4 and paragraphs 0037-0039, applicable for element 58).

Regarding claim 18, Graves discloses the node of claim 17 but does not specifically disclose that the number of transmitters corresponds to the number of output channels, and wherein the output branching mechanism connects each transmitter to an associated multiplexer input port. However, Graves discloses plural transmitters (fig. 3 element 34, where R represents plural add channels, each having an inherent transmitter). It would have been obvious to one of ordinary skill in the art at the time of the invention to set R to a value at least the same as the number of multiplexed channels, so that each multiplexed channel has the option of being switched through or added, including protection switched through additional switching unit  $12m+1$ , for maximizing traffic routing flexibility.

Regarding claim 19, Graves discloses the node of claim 16 wherein the transmitter connects to one or more output channels (fig. 3 element 34 connecting through to the output channels multiplexed by element 18) and is adapted to supply an information signal having a selectable wavelength to one of the output channels (fig. 3 element 14 and paragraphs 0033-0034, which converts the wavelengths of the add channels).

4. Claims 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves (US Patent Application Publication No. 2002/0064336) in view of Strasser July et al. ("Judy") (US Patent No. 5905838).

Regarding claims 15 and 20, Graves discloses the node of claims 12 and 16 respectively but does not disclose that each receiver comprises an optical-electrical converter or that each transmitter comprises an electrical-optical converter. However, Judy disclose that E/O and O/E are needed for WDM add/drop channels to accommodate local distribution of electrical signals (col. 13 lines 9-16). It would have been obvious to one of ordinary skill in the art at the time of the invention to use E/O and O/E converters for the add/drop channel transmitters and receivers respectively in Graves, to accommodate local distribution of electrical signals.

5. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves (US Patent Application Publication No. 2002/0064336) in view of Strasser et al. ("Strasser") (US Patent No. 2009/0142060).

Regarding claim 21, Graves discloses a node for an optical communication network (fig. 3 and paragraphs 0035-0036) comprising: at least one switching unit (fig. 3 where elements 12a-12m together read on a switching unit); a plurality of optical interfaces to connect to a Wavelength Division Multiplex (WDM) transmission line (fig. 3 elements 16 and 18), comprising: a demultiplexer to disassemble a multiplex signal arriving from the WDM transmission line into a plurality of input channels, each input channel being supplied to an input port of the switching unit (fig. 3 element 16); and a multiplexer to assemble a plurality of output channels from a corresponding plurality of output ports of the switching unit into an outgoing multiplex signal (fig. 3 element 18); and a transmitter to supply an information signal to the optical communication network



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(fig. 3 element 34 and paragraph 0034, where there are inherent transmitter for each add signal) and a receiver to extract an information signal received from the optical communication network (fig. 3 element 36 and paragraph 0034, where there are inherent receivers for each drop signal); and a branching mechanism disposed between each optical interface and the switching unit to selectively supply an output channel to the interface alternatively from the switching unit or from the transmitter and to selectively supply an input channel alternatively to the switching unit or to the receiver (fig. 3 elements 56 and 58 and paragraphs 0035-0036, where element 56 selectively supplies each input channels either to the switching unit 12a-12m when it's working, or to the drop channels by way of additional switching unit 12m+1 when switching unit 12a-12m has a failure, and where element 58 selectively outputs each channels either from the switching unit 12a-12m when it's working, or from the add channels by way of additional switching unit 12m+1 when switching unit 12a-12m has a failure).

Graves does not disclose a transponder comprising both the transmitter and the receiver. Strasser discloses a transponder for an OADM, used between the OADM and the clients, for transmitting optical add signals and receiving optical drop signals and inherent O/E and E/O converters for converting to and from electrical client signals (fig. 2 elements 230 and paragraph 0005). It would have been obvious to one of ordinary skill in the art at the time of the invention to use transponders like those of Strasser for pairs of add/drop channels of Graves, to provide a single client access point for each add/drop channel pair, as disclosed by Strasser.

Also, the combination as described above does not disclose that *each* optical interface unit of the fig. 3 embodiment comprises a demultiplexer and a multiplexer, and does not disclose that the transmitter and receiver of each transponder are connected to the same branching mechanism. However, Graves discloses that the unidirectional nature of the disclosure is only to simplify the drawings and that bidirectional traffic is supported by the switching planes with suitable input and output components (paragraph 0066). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify elements 16 and 18 of Graves fig. 3 to include both multiplexers and demultiplexers, and to modify elements 56 and 58 to support bidirectional traffic to and from the switching units and the add and drop channels, to support the bidirectional traffic suggested by Graves.

Regarding claim 22, the combination of Graves and Strasser discloses the node of claim 21 further wherein each branching mechanism is further operative to supply to the switching unit an input channel from the optical interface or from one of the transponders, and to supply an output channel from the switching unit to an output channel of the optical interface or to one of the transponders (Graves: fig. 3 elements 56 and 58, as modified in the combination for bidirectional transmission).

Regarding claim 23, the combination of Graves and Strasser discloses the node of claim 21 wherein each receiver comprises an optical-electrical converter, and each transmitter comprises an electrical-optical converter (Strasser: fig. 2 elements 230 and paragraph 0005, as applicable in the combination).

Regarding claim 24, the combination of Graves and Strasser discloses the node of claim 21 wherein the transponder includes a signal regenerator circuit (Strasser: fig. 2 elements 230 and paragraph 0005, as applicable in the combination, where the conversion to and from electrical, for the client signals, is a type of signal regeneration).

### ***Response to Arguments***

6. Applicant's arguments filed 7 September 2010 have been fully considered but they are not persuasive.

Applicant argues that the wavelength converting switch 14 of Graves is connected to the switching matrix 12 and thus if the switching matrix 12 fails, neither a working nor protection path of an optical signal can pass the node. This argument is not persuasive because the “switching matrix 12” corresponds to the “switch core” (see paragraph 0036), i.e. the collection of switch planes 12a-12m; the additional “spare switch matrix” element 12m+1, is not the same thing as the switch core and is alternatively connected to the wavelength converting switch 14; it is in fact used in the case that the switch core fails. Thus, Graves still reads on the claim because when using the spare switching matrix as an alternative to the switch core, the input signal is alternatively connected to the receiver (via wavelength converting switch 14). The claims only broadly require alternatively “supplying to”, they do not expressly require *direct connections*, or otherwise rule out any intermediary elements, between the branching mechanism and a switch and a transmitter/receiver.

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Applicant argues against the Office Notice taken for E/O and O/E converters for the transmitters and receivers, asserting that WDM optical network nodes are "technical facts in the areas of esoteric technology". To the contrary, WDM optical networks with E/O and O/E for transmitters and receivers, including add/drop transmitters and receivers, were known, common and widely available in the art well before Applicant's priority date and were in no way "esoteric technology" at the time of Applicant's priority date. WDM network products with add/drop such NEC's SpectralWave product line included E/O and O/E converters in their transmitters and receivers, including add/drop transmitters and receivers, as did competing products from companies like Lucent (see Judy above), Nortel, Alcatel, Ciena and others, well before the year 2003.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN M. CURS whose telephone number is (571)272-3028. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NATHAN M CURS/

Primary Examiner, Art Unit 2613